Space Weather Forecast

Issued on Monday, 18 July 2022 at 13:31 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class X-ray flares likely at first. Chance of minor geomagnetic storms from CME arrival 19 into 20 July.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low through the last 24 hours, seven sunspot regions spread across the visible disc. Two of these regions are more magnetically complex, one of the southwestern limb and one close to the solar equator in the eastern hemisphere, although most of the regions present a non-negligible risk of Moderate solar activity. No Earth-direct CMEs (coronal mass ejections) were observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind has declined from slightly elevated to ambient levels through the last 24 hours. Total magnetic field strength has been weak for much of the period, with a brief spike to moderate levels. The north-south component of the magnetic field has been weak through. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is likely to be moderate with a number of significant sunspot regions on the visible disc. There is a slight chance of High solar activity.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 15 July, is forecast to arrive at Earth either late on 19 or early on 20 July, with a chance of G1/Minor Storms. A fast solar wind may also connect with the Earth on 19 July, although this is likely to be masked by any CME arrival. A further fast wind connection is then forecast for day 4 (21 July). Geomagnetic activity should be most reliably Quiet on day 1, 18 July, rising to a Chance of G1 on 19 and 20 July, fading to a Slight Chance on 21 July.

Energetic Particles / Solar Radiation: Solar radiation storms are not expected in the period, but there is a daily slight chance of S1 or greater due to the presence of large sunspot regions in the central portion of the sun and the western solar hemisphere.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	40	40	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	60	50	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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